AMENDMENTS

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A temperature compensated current sensor for a circuit protection apparatus comprising:

a circuit protection device adapted to be operatively coupled to a powered circuit having current flowing therein;

a bus adapted to carry power therethrough;

a sensing resistor electrically coupled to the bus, the sensing resistor comprising a first end and an opposing second end, the sensing resistor adapted to provide a signal indicative of current flow through the bus;

temperature sensitive compensation circuit electrically coupled to the sensing resistor, the temperature sensitive compensation circuit comprising a first thermistor electrically coupled to the first end of the sensing resistor and a second thermistor electrically coupled to the second end of the sensing resistor, the temperature sensitive compensation circuit adapted to attenuate the signal indicative of current flow through the bus to a temperature compensated signal; and

an arc fault determination circuit adapted to determine an arc fault based upon the temperature compensated signal.

2. (Previously Presented) The apparatus of claim 1, wherein the arc fault determination circuit is an ASIC circuit.

3. (Previously Presented) The apparatus of claim 1, wherein the circuit protection device comprises an operational amplifier, the operational amplifier adapted to amplify the signal indicative of current flow through the bus or the temperature compensated signal.

4. (Currently Amended) The apparatus of claim 1, wherein the temperature sensitive compensation circuit comprises ~~at least one~~ a third thermistor.

5. (Currently Amended) The apparatus of claim 4, wherein the ~~at least one~~ first thermistor is positioned between the sensing resistor and the arc fault determination circuit.

6. (Currently Amended) The apparatus of claim 4, wherein the ~~at least one~~ first thermistor is linear.

7. (Currently Amended) The apparatus of claim 4, wherein the ~~at least one~~ first thermistor is ceramic.

8. (Currently Amended) The apparatus of claim 4, wherein the ~~at least one~~ first thermistor is a PTC thermistor.

9. (Currently Amended) The apparatus of claim 4, wherein the ~~at least one~~ third thermistor is a NTC thermistor.

10. (Currently Amended) A sense resistor apparatus for providing a temperature independent current signal at varying ambient temperatures, comprising:

a sense resistor adapted for sensing a current passed through the sense resistor and adapted for generating a voltage signal, the sense resistor comprising a first end and an opposing second end, the first end of the sense resistor electrically coupled to a load neutral, the second end of the sense resistor electrically coupled to a neutral pigtail;

at least one thermistor adapted for thermally compensating the voltage signal generated through the sense resistor; and

an arc fault determination circuit adapted to receive a temperature compensated voltage signal from the at least one thermistor, the circuit adapted provide a signal to trip a circuit breaker responsive to responsive to a determination of an arc fault by the circuit, the determination of the arc fault based upon the temperature compensated voltage signal.

11. (Previously Presented) The apparatus of claim 10, wherein the at least one thermistor is positioned between the sense resistor and the circuit.

12. (Original) The apparatus of claim 10, wherein the at least one thermistor is linear.

13. (Original) The apparatus of claim 10, wherein the at least one thermistor is ceramic.

14. (Original) The apparatus of claim 10, wherein the at least one thermistor is a PTC thermistor.

15. (Original) The apparatus of claim 10, wherein the at least one thermistor is a NTC thermistor.

16. (Currently Amended) An apparatus for thermally compensating a voltage signal for an AFCI circuit, comprising:

a sense resistor adapted for sensing a current passed through the sense resistor and generating the voltage signal, the sense resistor comprising a first end and an opposing second end, the first end of the sense resistor electrically coupled to a load neutral, the second end of the sense resistor electrically coupled to a neutral pigtail;

at least one thermistor adapted for thermally compensating the voltage signal generated through the sense resistor; and

an operational amplifier adapted for conditioning a thermally compensated voltage signal before the thermally compensated voltage signal enters a detection circuit of an arc fault circuit interrupter device.

17. (Original) The apparatus of claim 16, wherein the detection circuit comprises an ASIC circuit.

18. (Previously Presented) The apparatus of claim 16, wherein the at least one thermistor is positioned between the sense resistor and an ASIC circuit.

19. (Original) The apparatus of claim 16, wherein the at least one thermistor is ceramic.

20. (Original) The apparatus of claim 16, wherein the at least one thermistor is linear.

21. (Original) The apparatus of claim 16, wherein the at least one thermistor is a PTC thermistor.

22. (Original) The apparatus of claim 16, wherein the at least one thermistor is a NTC thermistor.

23. (Currently Amended) A method for translating a current signal into a temperature compensated voltage signal for an AFCI circuit, comprising:

generating a voltage signal by passing the current signal through a sense resistor, the sense resistor comprising a first end and an opposing second end;

applying the voltage signal through ~~at least one~~a first thermistor electrically coupled to the first end of the sense resistor and a second thermistor electrically coupled to the second end of the sense resistor ~~thermistor~~ to generate a thermally proportional voltage signal;

amplifying the thermally proportional voltage signal by energizing an operational amplification circuit; and

tripping a circuit breaker based upon a determined arc fault, the arc fault determined based upon the thermally proportional voltage signal.

24. (Previously Presented) The method of claim 23, wherein an ASIC circuit determines the arc fault.

25. (Currently Amended) The method of claim 23, wherein the ~~at least one~~first thermistor is positioned between the sense resistor and -an ASIC circuit that determines the arc fault.

26. (Currently Amended) The method of claim 23, wherein the ~~at least one~~first thermistor is linear.

27. (Currently Amended) The method of claim 23, wherein the ~~at least one~~first thermistor is ceramic.

28. (Currently Amended) The method of claim 23, wherein the ~~at least one~~first thermistor is a PTC thermistor.

29. (Currently Amended) The method of claim 23, wherein the ~~at least one~~thermally proportional voltage signal is applied via a third thermistor that is a NTC thermistor.

30. (Currently Amended) A method for thermally compensating a voltage signal, comprising:

generating the voltage signal by passing a current signal through a sense resistor, the sense resistor comprising a first end and an opposing second end; and

applying the voltage signal through ~~at least one thermistor~~ a first thermistor electrically coupled to the first end of the sense resistor and a second thermistor electrically coupled to the second end of the sense resistor to generate a thermally proportional voltage signal, the voltage signal provided to an arc fault determination circuit adapted to determine an arc fault based upon the thermally proportional voltage signal, the circuit adapted to cause a circuit breaker to trip responsive to the arc fault.

31. (Currently Amended) The method of claim 30, wherein the ~~at least one~~first thermistor is linear.

32. (Currently Amended) The method of claim 30, wherein the ~~at least one~~first thermistor is a PTC thermistor.

33. (Currently Amended) The method of claim 30 wherein the ~~at least one~~ thermally proportional voltage signal is applied via a third thermistor that is a NTC thermistor.

34. (Currently Amended) A method for thermally compensating a current sensor for a circuit protection apparatus comprising:

coupling a circuit protection device to a powered circuit having current flowing therein; coupling a bus adapted for carrying power therethrough;

electrically coupling a sensing resistor to the bus, the sensing resistor adapted for sensing current flow through the bus, the sensing resistor comprising a first end and an opposing second end;

coupling a temperature sensitive compensation circuit to the sensing resistor, the temperature sensitive compensation circuit comprising a first thermistor electrically coupled to the first end of the sensing resistor and a second thermistor electrically coupled to the second end of the sensing resistor, the temperature sensitive compensation circuit adapted for compensating ambient temperature; and

coupling an arc fault determination circuit to the temperature sensitive compensation circuit, the arc fault determination circuit adapted to cause a circuit breaker to trip responsive to an arc fault determination, the arc fault determination based upon an output of the temperature sensitive compensation circuit.

35. (Previously Presented) The method of claim 34, wherein the arc fault determination circuit comprises an ASIC circuit.

36. (Previously Presented) The method of claim 34, wherein the arc fault determination circuit comprises an operational amplifier.

37. (Currently Amended) The method of claim 34, wherein the temperature sensitive compensation circuit comprises ~~at least one~~ a third thermistor.

38. (Currently Amended) The method of claim 37, wherein the ~~at least one~~ first thermistor is positioned between the sensing resistor and the arc fault determination circuit.

39. (Currently Amended) The method of claim 37, wherein the ~~at least one~~ first thermistor is linear.

40. (Currently Amended) The method of claim 37, wherein the ~~at least one~~ first thermistor is ceramic.

41. (Currently Amended) The method of claim 37, wherein the ~~at least one~~first thermistor is a PTC thermistor.

42. (Currently Amended) The method of claim 37, wherein ~~the at least one~~third thermistor is a NTC thermistor.